

ABSTRACT OF THE DISCLOSURE

A method for manufacturing microneedle structures is disclosed using soft lithography and photolithography, in which micromold structures made of a photoresist material or PDMS are created. The micromold manufacturing occurs quite quickly, using inexpensive materials and processes. Once the molds are available, using moldable materials such as polymers, microneedle arrays can be molded or embossed in relatively fast procedures. In some cases a sacrificial layer is provided between the forming micromold and its substrate layer, for ease of separation. The microneedles themselves can be solid projections, hollow "microtubes," or shallow "microcups." Electrodes can be formed on the microneedle arrays, including individual electrodes per hollow microtube.